

REMARKS/ARGUMENTS

Claim Amendments

Claims 1-22 and 38-58 are pending. Claims 23-37 are withdrawn. Claims 15, 16, 52, and 53 are currently amended to change their dependencies. All other pending claims are as previously presented. The Applicants submit that no new matter is added by these amendments.

Claim Rejections – 35 U.S.C. 103

The Office Action maintains the rejection mailed on November 16, 2005 which rejected all claims as being obvious over Holland '058 in view of Bertelsen '037 and, for some dependent claims, further in view of Shippey '301 and Uhlinger '556. The Applicants respectfully traverse these rejections.

Independent claims 1 and 38 are rejected over Holland '058 in view of Bertelsen '037. Both of these claims recite a process wherein the feed water has a superficial velocity of between 0.05 and 0.4 feet per second and at least 70% of the feed water is collected as permeate from the permeate side of the module. The Applicants submit that the cited references do not disclose or make such a combination obvious.

Regarding reference '058, the Office Action cites the abstract, Figures 1 and 6, column 9, lines 50-60 and column 10, lines 7-16 as disclosing recovery rates of 75% and 90%. The Applicants submit that, of these references, the abstract and Figures 1 and 6 do not disclose recovery rates. Further, the reference at column 10, lines 7-16 recites a 4% recovery rate. The reference at column 9, lines 50-60 mentions a 75% recovery but the feed superficial velocity is not specified. The Office Action acknowledges that the superficial velocity claimed in claims 1 and 38 is not disclosed in reference '058. The Applicants submit further that reference '058 does not discuss any specific superficial feed velocities, does not teach that any range of superficial feed velocities may be desirable and does not teach that

superficial feed velocity is a result effective parameter in combination with a process having the claimed recovery or at all.

The Office Action concludes that the teaching in reference '058 would have motivated someone to obtain a particular recovery and to achieve a particular superficial velocity. The Applicants disagree. The examples in reference '058, as mentioned above, included recoveries in one case of 75% and in another case of 4%. This does not teach a preference for any particular recovery. Further, while reference '058 may teach that it is desirable to reduce the variability of fluid velocity, reference '058 says nothing about what particular fluid velocity is desirable. Reference '058 further fails to say anything about a desired combination of superficial feed velocity and permeate recovery.

Reference '037 similarly does not teach a combination of superficial feed velocity and recovery as claimed. Regarding these parameters, the Office Action cites Figure 8, column 6, lines 49-53 and column 7, lines 1-22. Figure 8 is described by column 7, lines 1-22 and is intended to show how velocity varies between the inlet and the outlet of a module for two different modules. Figure 8 and column 7, lines 1-22 do not teach that any particular velocity is desired, only that low variability is desired. In contrast to the claims, column 7, lines 12-14, suggest that best performance is achieved at between 7 and 7.5 gpm which corresponds with a velocity of over 0.7 ft/sec, or well above the claimed range. Further, while operating in this range, only one gpm of permeate is produced, for a recovery of less than 15% which is well below the claimed range. Accordingly, this reference would not encourage a person skilled in the art to modify any process of reference '058 to be within the Applicants' claims.

Claim 6, lines 49-53 similarly does not make Applicants' claims obvious. Reading from line 44 of column 6, reference '037 teaches that a normal recovery is between 8% and 20%. Only some processes are said to have higher recoveries and reference '037 does not teach what these processes are or what the superficial feed velocity for these processes should be. For these reasons, the

Applicants submit that reference '037 does not contain any teaching that would obviously lead a person skilled in the art to use a combination of permeate recovery and superficial feed velocity as claimed in claims 1 and 38.

All of the dependent claims depend on either claim 1 or 38 and so are not obvious for at least the reasons given above in relation to claims 1 and 38. The additionally cited references do not disclose the additional elements of these claims nor provide any teaching that leads to an obvious combination with reference '058 or '037. The Applicants make the following further submissions in relation to some of the dependent claims.

The Office Action states that reference '301 relates to a spiral wound membrane. Applicant submits that '301 does not disclose a spiral wound membrane but rather a desalination cell 36 which, as described at col. 4, lines 14-20 and shown in Figure 1A, is not a spiral wound membrane.

In relation to claims 2 and 39, as discussed above, the cited references do not disclose a recovery of 90% as stated in the Office Action.

Regarding claims 3 and 40-41, the Office Action refers to providing multiple membrane elements in series or parallel to increase system permeate recovery but the claims do not recite a system permeate recovery.

Regarding claim 4 and 39, as discussed above, the example at column 9, lines 50-61 does not disclose a superficial feed velocity within the claims.

Regarding claims 5-6, 19-21, 40-43 and 55-56, disclosure of a desire to maintain a constant feed velocity is not disclosure of any particular superficial feed velocity.

Regarding claims 7, 21, 44 and 57, neither '301 nor '058 teach contacting with air to increase the dissolved oxygen content of feed water. Neither '301, nor '058 teach holding the cleaning chemical in the feed/concentrate side module for a

reaction time. Rather, 301' teaches a flushing cycle which has a continuous flow through the reverse osmosis machine (col. 8 lines 25-34).

Regarding claims 8, 9, 45 and 46, the office action states that reference '556 discloses a holding tank that collects permeate, and has a level control means for operating the feed pump based on the permeate level in the tank. '556 teaches a membrane system which includes a nanofiltration (NF) separation element and a reverse osmosis (RO) element, which are operated in a variety of ways according to a variety of signals. The Office Action has not established that this system operates as in the claims nor that the peculiar system of '556 is related to a process as described in claims 1 or 38.

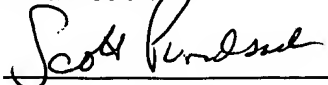
Regarding claims 10-14 and 44-51, '301 fails to describe a step of holding the cleaning chemical and so fails to provide all of the parts of the claim.

The Office Action states that U.S. Patent No. 4,814,079 is newly cited. However, the Office Action does not base any rejection on U.S. 4,814,079. The Office Action notes that U.S. 4,814,079 describes a superficial velocity of "0.5 to 0.1 feet/second". However, U.S. 4,814,079 actually refers to a velocity of 0.5 to 1 foot per second. This velocity is outside of the claimed range. Further, the velocity value is provided as part of a summary of various prior references. There is no teaching that a velocity less than 0.5 feet per second might be used and no teaching that the velocity should be used in combination with any particular recovery rate.

For the reasons above, the Applicants submit that the claims are allowable.

Respectfully submitted,

HUSAIN et al.

By 
Scott Pundsack
Reg. No. 47,330
Tel: (416) 957-1698